

**CHICAGO  ELECTRIC<sup>®</sup>**  
**POWER TOOLS**

# 1/2" D-HANDLE VSR DRILL

**Model 47991**

**SET UP AND OPERATING INSTRUCTIONS**



Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.  
Failure to do so can result in serious injury.  
SAVE THIS MANUAL.**

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**For technical questions or replacement parts, please call 1-800-444-3353.**

Revised Manual 07d, 09j, 11a

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## SPECIFICATIONS

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Power	120 V~, 60 Hz, 10 A
Chuck Capacity	1/16" - 1/2"
Speed	0 - 800 RPM No Load
Dimensions	8-5/8" W x 15-3/4" L x 6-1/4" H
Power Cord	6' Long, 18 AWG

**Note:** Performance of this tool (if powered by line voltage) may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.

### Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

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## SAFETY WARNINGS AND PRECAUTIONS

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**WARNING:** When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

**Read all instructions before using this tool!**

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.

4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
7. **Use eye and ear protection.** Always wear ANSI approved impact safety goggles and ear protection. Wear a full face shield if you are producing metal filings or wood chips. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists.
8. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
9. **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
10. **Disconnect power.** Unplug tool when not in use.

11. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or machine work surface before plugging it in.
12. **Avoid unintentional starting.** Do not carry any tool with your finger on the trigger, whether it is plugged in or not.
13. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
14. **Take caution as some woods contain preservatives such as copper chromium arsenate (CCA) which can be toxic.** When drilling these materials extra care should be taken to avoid inhalation and minimize skin contact.
15. **WARNING: Some dust created by power sanding, sawing, grinding, drilling, and other construction activities, contains chemicals known [to the State of California] to cause cancer, birth defects or other reproductive harm.** Some examples of these chemicals are:  
 Lead from lead-based paints  
 Crystalline silica from bricks and cement or other masonry products  
 Arsenic and chromium from chemically treated lumber  
 Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles. (California Health & Safety Code § 25249.5, *et seq.*)
16. **People with pacemakers should consult their physician(s) before use.** Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:
  - Avoid operating alone.
  - Don't use with power switch locked on.
  - Properly maintain and inspect to avoid electrical shock.
  - Any power cord must be properly grounded. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.
17. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if the trigger does not turn On and Off properly.
18. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
19. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
20. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.

21. **Use proper size and type extension cord.** If an extension cord is required, it must be of the proper size and type to supply the correct current to the tool without heating up. Otherwise, the extension cord could melt and catch fire, or cause electrical damage to the tool. This tool requires use of an extension cord of **0 to 10 amps** capability (up to 50 feet), with wire size rated at **18 AWG**. Longer extension cords require larger size wire. If you are using the tool outdoors, use an extension cord rated for outdoor use (signified by “WA” on the jacket).
22. **Maintenance.** For your safety, maintenance should be performed regularly by a qualified technician.
23. **The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.**

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## UNPACKING

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When unpacking, check to make sure the parts listed on page 6 are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

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## OPERATION

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**Refer to FIGURE 1 below.**

**Warning!** Always unplug the unit when changing bits.

**Warning!** After drilling or driving screws, the bit will be extremely hot. Do not touch it until it has had ample time to cool down.

1. Insert the **Chuck Key (41)** into one of the holes in the **Chuck (3)** and turn it counterclockwise to open the jaws.
2. Insert the bit and hand tighten it, then tighten it with the **Chuck Key (41)** by turning it clockwise.



3. With heavy leather gloves on, tug on the bit and make sure it is securely attached. Check that it is straight.

**Note:** Always use sharp bits. Dull or damaged bits may cause undue stress on the drill and possibly break causing injury. Bits are available at Harbor Freight Tools.

4. Securely clamp your workpiece.
5. Locate the Side Handle on the desired side of the tool.

### Drilling

6. When drilling wood, place the bit at the point to be drilled. If you are drilling a hard, smooth surface, use a punch to mark the drill location. Set the Directional Switch forward. Grasp the handles firmly with both hands and slowly squeeze the **Trigger (34)**. Never operate the tool without the side handle. Never force the tool. Only apply light pressure when horizontal drilling. If you need more or less torque, use the torque adjustment on the top of the drill.

**Note:** When drilling plastics or plastic coated chip board, follow the same directions as stated in number 5 for wood.

**Note:** If a bit becomes wedged into the workpiece, stop and change the Directional Switch to the reverse position. Then slowly squeeze the Trigger to back the bit out of the work piece.

7. When drilling metal, always use a punch to mark the drilling position. Use a lubricant to prolong the life of the bit and increase the drilling action with most metals. With steel, tin, and sheet metal use a light machine oil, with aluminum, use paraffin. Do not

use lubricants with brass, copper, and cast iron. Grasp the handles firmly with both hands and slowly squeeze the **Trigger (34)**. Never operate the tool without the side handle. Never force the tool. Only apply light pressure when horizontal drilling.

8. When driving screws, use bits suitable for the type and size of screw you are using. Drill a pilot hole for the screw head to bite into. Use the lowest torque setting. Grasp the handles firmly with both hands and slowly squeeze the **Trigger (34)**. Never force the tool. To back out a screw, stop and change the Directional Switch to the back position.

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### MAINTENANCE

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1. Unplug the drill while performing maintenance.
2. Periodically check the mounting screws and tighten if necessary.
3. Clean the unit with a damp cloth. Never use solvents to clean the unit.
4. Inspect the chuck and remove any dirt or debris.
5. Inspect the **Carbon Brushes (29)**. See Figure 1 on page 4.
  - Remove the **Carbon Brush Cap (30)** on top of the drill.
  - Take the **Carbon Brush (29)** out of the **Brush Holder (28)**. If it is dirty, use a pencil eraser to clean it. If it is worn, replace it and replace the **Carbon Brush Cap (30)**. If you replace one Carbon Brush, you must replace them both. Repeat the process with the **Carbon Brush Cap (30)** on the bottom of the drill.



## PARTS LIST

Part	Description	Q'ty
1	Screw	1
2	Washer	1
3	Chuck	1
4	Fender Ring	1
5	Felt Cover	1
6	Felt	1
7	1/2 Circle Key	1
8	Spindle	1
9	Screw	4
10	Bearing	1
11	Head Shell	1
12	Gear	1
13	Needle Bearing	1
14	Needle Bearing	1
15	1/2 Circle Key	1
16	Middle Gear	1
17	Gear	1
18	Needle Bearing	1
19	Middle Cover	1
20	Bearing	1
21	Armature	1

Part	Description	Q'ty
22	Windshield	1
23	Bolt	2
24	Stator	1
25	Bearing	1
26	Bearing Sleeve	1
27	Motor Housing	1
28	Brush Holder	2
29	Carbon Brush	2
30	Carbon Brush Cap	2
31	Right Handle	1
32	Screw	6
33	Governor	1
34	Trigger	1
35	Cable Clamp	1
36	Screw	2
37	Cable Sheath	1
38	Power Cord	1
39	Left Handle	1
40	Screw	8
41	Chuck Key	1

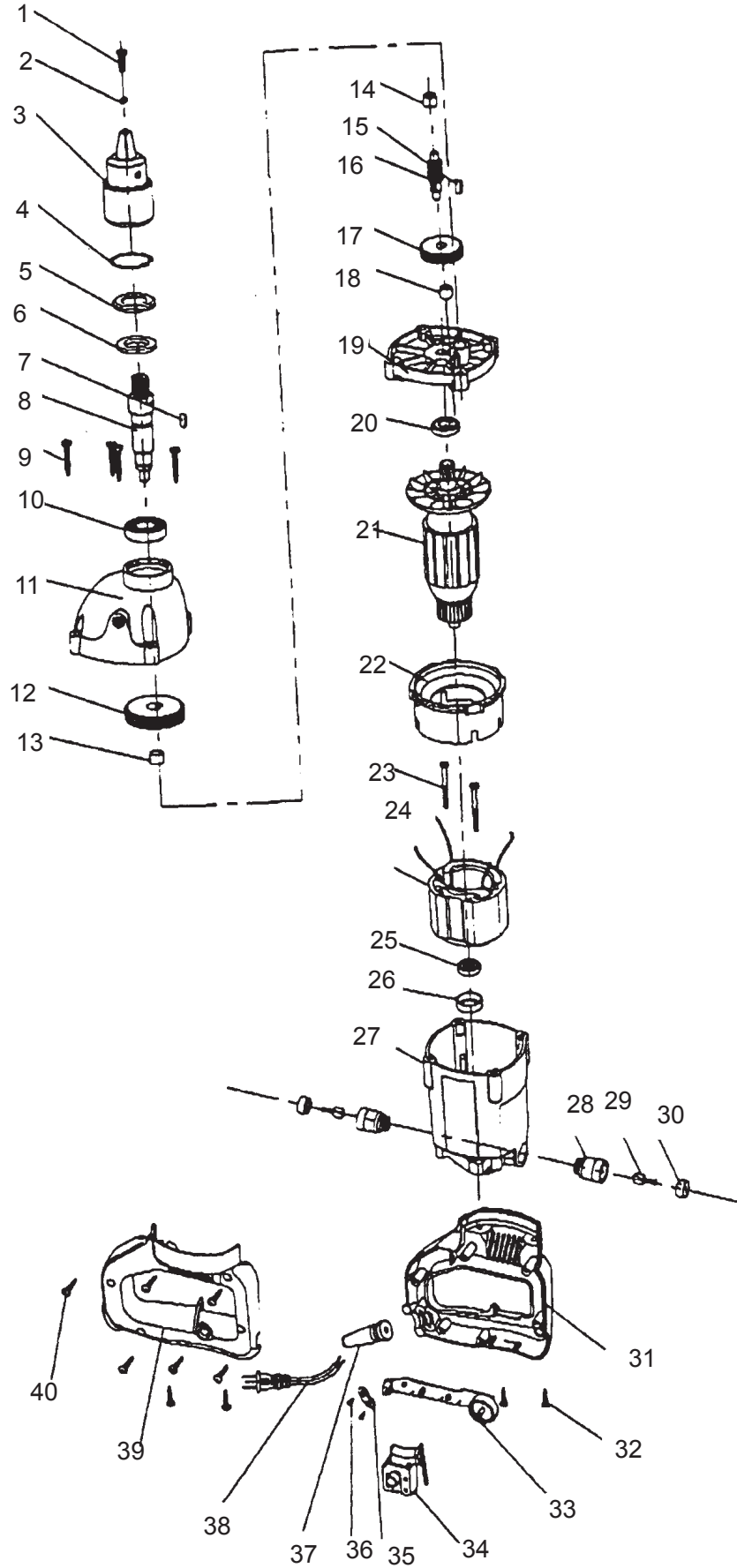
**Note:** Chuck Key (41) not shown in Assembly Drawing.

### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

**Note:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

# ASSEMBLY DRAWING



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## LIMITED 90 DAY WARRANTY

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Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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